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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/963,283	09/26/2001	Christian X. Campbell	01P17799US	1513
7590	07/07/2005		EXAMINER	
Siemens Corporation Intellectual Property Department 186 Wood Avenue South Iselin, NJ 08830			TRAN, HIEN THI	
			ART UNIT	PAPER NUMBER
			1764	

DATE MAILED: 07/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/963,283	CAMPBELL ET AL.	
	Examiner	Art Unit	
	Hien Tran	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 4/12/05 & 3/07/05.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1,2,6-8 and 23-30 is/are pending in the application.
4a) Of the above claim(s) 23-30 is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1,2 and 6-8 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) 1,2,6-8 and 23-30 are subject to restriction and/or election.

Application Papers

9) The specification is objected to by the Examiner. .

10) The drawing(s) filed on 07 March 2005 is/are: a) accepted or b) objected to by the Examiner.

 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
5) Notice of Informal Patent Application (PTO-152)
6) Other: _____

DETAILED ACTION

Election/Restrictions

1. Newly submitted claims 23-30 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

The single layer of ceramic material with thickness specifically called for in claim 23 is not required by any other groups.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 23-30 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Drawings

2. The drawings are objected to because the replacement sheet(s) was not be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)). The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. The art area applicable to the instant invention is that of catalytic combustor.

One of ordinary skill in this art is considered to have at least a B.S. degree, with additional education in the field and at least 5 years practical experience working in the art; is aware of the state of the art as shown by the references of record, to include those cited by applicants and the examiner (*ESSO Research & Engineering V Kahn & Co*, 183 USPQ 582 1974) and who is presumed to know something about the art apart from what references alone teach (*In re Bode*, 193 USPQ 12, (16) CCPA 1977); and who is motivated by economics to depart from the prior art to reduce costs consistent with the desired product characteristics. *In re Clinton* 188 USPQ 365, 367 (CCPA 1976) and *In re Thompson* 192 USPQ 275, 277 (CCPA 1976).

6. Claims 1, 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pfefferle et al (6,272,863 or 4,603,547) in view of Kojima et al (5,840,434), Mahalla (4,086,082), Rigney et al (6,586,115 or 6,492,038) and Xiao et al (6,162,530).

Pfefferle et al '863 discloses a catalytic combustor comprising: a catalytic element disposed downstream of the fuel-air mixing device (not shown) for receiving fuel-air mixture 11; the catalytic element comprising: a substrate 16; a thermal barrier coating 17 and a combustion catalyst 15 disposed on the barrier coating for reacting the fuel-air mixture (col. 3, line 16 to col. 4, line 50).

Similarly, Pfefferle et al '547 discloses a catalytic combustor comprising: a catalytic element disposed downstream of the fuel-air mixing device (not shown) for receiving fuel-air mixture; the catalytic element comprising: a substrate 20; a thermal barrier coating 21 and a combustion catalyst 22 disposed on the barrier coating for reacting the fuel-air mixture (col. 2, line 26 to col. 3, line 67).

The apparatus of Pfefferle et al is substantially the same as that of the instant claims, but is silent as to whether the thermal barrier coating may have a columnar grained microstructure having primary columns supporting the secondary branches and have a specific surface area of at least 18 m²/g.

However, Kojima et al discloses provision of a thermal barrier coating being deposited on the substrate by electron beam vapor deposition and as a result having a columnar grained microstructure with a plurality of primary columns, secondary branches and tertiary branches for providing sufficient endurance under severe heat load conditions of high operation temperature (col. 7, lines 40-48).

Rigney et al also discloses provision of a thermal barrier coating having a columnar grain structure with columns and secondary growth arms extending from the columns (col. 4, line 57 to col. 5, line 1 in Rigney et al '115 and col. 2, lines 20-45 in Rigney et al '038).

Mahalla discloses the conventionality of columnar crystals with secondary and tertiary arms growing in directions with respect to the main stem (e.g. primary column) (col. 4, line 63 to col. 5, line 9).

It would have been obvious to one having ordinary skill in the art to substitute the thermal barrier coating of Kojima et al, and both Rigney et al for the thermal barrier coating of

Pfefferle et al so as to provide a system having sufficient endurance under severe heat load conditions of high operation temperature. The secondary and tertiary branches are known in the columnar crystals as evidenced by Mahalla.

With respect to the specific surface area in claims 1, 6, 7, Xiao et al discloses that a thermal barrier coating may exhibit a specific surface area of at least $18 \text{ m}^2/\text{g}$, e.g. $120 \text{ m}^2/\text{g}$ (see, for example, col. 17, lines 21-33).

It would have been obvious to one having ordinary skill in the art to select an appropriate specific surface area as taught by Xiao et al in the modified apparatus of Pfefferle et al for providing a large area deposition of catalyst coatings, thereby enhancing the catalyst reaction thereof.

With respect to the specific cone shape of the secondary growth arms in claim 7, it should be noted that the shape of the secondary growth arms is not considered to confer patentability to the claim. It would have been an obvious matter of design choice to select an appropriate shape for the secondary growth arms, since such a modification would have involved a mere change in the shape of a component. A change in shape is generally recognized as being within the level of ordinary skill in the art, absence showing any unexpected results. *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966).

With respect to the specific dimension of the columns and the secondary growth arms in claim 7, it would have been an obvious matter of design choice to one having ordinary skill in the art to select an appropriate size for the columns and the secondary growth arms since it has been held that where the general conditions of a claim are disclosed in the prior art, merely

discovering the relative dimension or size involves only routine skill in the art. *In re Gardner v. TEC systems, Inc.* 725 F.2d 1338, 220 USPQ 777.

7. Claims 2 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pfefferle et al (6,272,863 or 4,603,547) in view of Kojima et al (5,840,434), Mahalla (4,086,082), Rigney et al (6,586,115 or 6,492,038) and Xiao et al (6,162,530) as applied to claims 1, 6-7 above and further in view of Hughes (5,985,220) and Dalla Betta et al (5,518,697).

The modified apparatus of Pfefferle et al is substantially the same as that of the instant claims, but is silent as to whether a ceramic wash-coat may be placed under the catalyst layer.

However, Hughes discloses the conventionality of providing a thermal barrier coating locating beneath the washcoats and catalyst material thereof. Dalla Betta et al discloses the conventionality of providing a ceramic wash-coat under the catalyst layer to improve the stability and performance of the catalyst material.

It would have been obvious to one having ordinary skill in the art to provide a ceramic wash-coat on top of the thermal barrier coating as taught by Hughes and under the catalyst layer as taught by Dalla Betta et al in the modified apparatus of Pfefferle et al for improving the stability and performance of the catalyst material as taught by Dalla Betta et al.

Double Patenting

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground

provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

9. Claims 1-2, 6-8 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-12 of copending Application No. 10/158,372 in view of Kojima et al (5,840,434), Mahalla (4,086,082), Rigney et al (6,586,115 or 6,492,038) and Xiao et al (6,162,530).

The same comments with respect to Kojima et al, Mahalla, both Rigney et al and Xiao et al apply.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Response to Arguments

10. Applicant's arguments with respect to claims 1-2, 6 have been considered but are moot in view of the new ground(s) of rejection.

Applicants argue that in Kojima et al, the secondary columnar texture is nothing more than co-joined adjacent primary columns, and each secondary texture is supported at its base from the substrate, not from adjacent primary column. Such contention is not persuasive as although the secondary and tertiary textures in Kojima et al are adjacent to each other and to the primary columns, such position meets the broad term of "supporting" in the instant claim.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hien Tran whose telephone number is (571) 272-1454. The examiner can normally be reached on Tuesday-Friday from 7:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hien Tran

HT

Hien Tran
Primary Examiner
Art Unit 1764